

**Commonwealth of Kentucky
Division for Air Quality**

PERMIT APPLICATION SUMMARY FORM

Completed by: Martha M. Allman

GENERAL INFORMATION:

Name:	Marrillia Environmental, LLC
Address:	Ranch Road Mt. Washington, KY 40047
Date application received:	6/21/2007
SIC Code/SIC description:	4953, Refuse Systems (solid waste combustors and incinerators)
Source ID:	21-029-00045
Agency Interest:	70880
Activity:	APE20070001
Permit:	F-07-040

APPLICATION TYPE/PERMIT ACTIVITY:

<input checked="" type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input type="checkbox"/> Permit modification	<input checked="" type="checkbox"/> Conditional major
<input type="checkbox"/> Administrative	<input type="checkbox"/> Title V
<input type="checkbox"/> Minor	<input type="checkbox"/> Synthetic minor
<input type="checkbox"/> Significant	<input type="checkbox"/> Operating
<input type="checkbox"/> Permit renewal	<input checked="" type="checkbox"/> Construction/operating

COMPLIANCE SUMMARY:

<input type="checkbox"/> Source is out of compliance	<input type="checkbox"/> Compliance schedule included
<input type="checkbox"/> Compliance certification signed	

APPLICABLE REQUIREMENTS LIST:

<input type="checkbox"/> NSR	<input checked="" type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input type="checkbox"/> PSD	<input type="checkbox"/> NESHAPS	<input type="checkbox"/> Other
<input type="checkbox"/> Netted out of PSD/NSR	<input checked="" type="checkbox"/> Not major modification per 401 KAR 51:001, 1(116)(b)	

MISCELLANEOUS:

- ☐ Acid rain source
- ☐ Source subject to 112(r)
- ☒ Source applied for federally enforceable emissions cap
- ☐ Source provided terms for alternative operating scenarios
- ☐ Source subject to a MACT standard
- ☐ Source requested case-by-case 112(g) or (j) determination
- ☐ Application proposes new control technology
- ☒ Certified by responsible official
- ☐ Diagrams or drawings included
- ☐ Confidential business information (CBI) submitted in application
- ☐ Pollution Prevention Measures
- ☒ Area is non-attainment (list pollutants): Ozone, PM_{2.5}

EMISSIONS SUMMARY:

Pollutant	Actual (tpy)	Potential (tpy)
PM/PM ₁₀		15.85/15.85
SO ₂		0.81
NO _x		3.25
CO		10.57
VOC		89.41
Single HAPs		.0016
Source wide HAPs		.006

SOURCE DESCRIPTION:

On June 21, 2007, Marrillia Environmental, LLC ("Marrillia"), filed an application to incinerate wood by means of a mechanical combustion unit (MCU - also known as an air curtain incinerator) in Mt. Washington, KY. An air curtain incinerator operates by forcefully projecting a curtain of air across an open, integrated combustion chamber (fire box) or open pit or trench (trench burner) in which combustion occurs. An 88-horsepower diesel combustion engine will provide air/oxygen across the opening of the MCU to provide for more complete combustion and to control particulate matter.

Marrillia proposes to incinerate only clean lumber, wood waste, and yard waste in a fire box-type of air curtain incinerator. As defined in 40 CFR 60.2265, clean lumber includes wood or wood products that have been cut or shaped and include wet, air-dried, and kiln-dried wood products. Clean lumber does not include wood products that have been painted, pigment-stained, or pressure-treated by compounds such as chromate copper arsenate, pentachlorophenol, and creosote. Wood waste includes untreated wood and untreated wood products, including tree stumps (whole or chipped), felled trees, tree limbs (whole or chipped), bark, sawdust, chips, scraps, slabs, millings and shavings. Yard waste includes grass, grass clippings, bushes, shrubs, and clippings from bushes and shrubs, which come from residential, commercial, retail, institutional, or industrial sources as part of maintaining yards or other private or public lands. None of these activities includes construction, renovation, and demolition wastes.

Wood material will be hauled in by truck and stored in bins prior to incineration. After incineration, the ash will be mixed with dirt by a dozer onsite to be used later as fill dirt as part of Marrillia's excavation operations.

Mt. Washington is in Bullitt County, which is non-attainment for ozone¹ and PM_{2.5}. To preclude applicability of 401 KAR 51:052, Review of new sources in or impacting nonattainment areas,

¹ The Louisville, KY area has been redesignated as attainment effective August 7, 2007.

Marrillia proposes to limit VOC and PM emissions to under 100 tons per year by limiting its operating hours to 2125 hours per year and limiting the rate at which material is burned (charging rate) to 7.65 tons per hour. However, the 7.65 tons per hour limitation appears to have been designed to ensure compliance with 401 KAR 59:010, New Process Operations, which was erroneously applied. The correct regulations are 40 CFR 60 Subpart CCCC, Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction Is Commenced after November 30, 1999 and 401 KAR 59:020, New Incinerators, applicable to each incinerator with a charging rate of more than 50 tons per day commenced after August 17, 1971.

401 KAR 59:020 limits particulate matter emissions to 0.18 g/dscm (0.08 gr/dscf) corrected to 12 percent carbon dioxide excluding the contribution of carbon dioxide from the auxiliary fuel. It is not certain whether limiting the charging rate is necessary to comply with this emission limit. The application contained only emission factors in terms of pounds per ton of wood burned, which is not in units of the emission standard. The application did contain the results of Method 5 testing, "Final Report Describing Particulate and Carbon Monoxide Emissions from the Whitton S-127 Air Curtain Destructor" dated December 26, 2000, but lacked the appendices which provide the Method 5 data. However, a copy of the full report with appendices was available at www.airburners.com and is appended to this Statement of Basis. The data in Appendix A of that report, "Method 5 Calculation Sheet", suggests that the emissions would exceed the standard when corrected to 12 percent carbon dioxide. However, it is uncertain how relevant this data is to the proposed air curtain incinerator, and the only way to be certain would be to test the actual device to determine if the particulate matter emissions limit can be achieved at maximum operating capacity. Since it is unknown what impact the charging rate would have on particulate matter emissions, the typical method of monitoring process inputs and multiplying by emission factors to estimate emissions would not yield desired results until a relationship, if any, is established through testing. Therefore, to satisfy periodic monitoring requirements, the applicant shall make daily qualitative observations when the unit is in operation and if emissions are visible, shall perform a Reference Method 9 opacity test. During the required initial and subsequent annual particulate matter testing, Reference Method 9 tests shall be taken simultaneously in order to determine the correlation between particulate matter mass emissions with opacity. The testing shall also include varying input quantities to determine the impact on particulate matter emissions levels, and whether or not reducing the charging rate is necessary to meet emission limitations.

Some limitations in hours of operation or charging rate or both are necessary to limit emissions below 100 tons for each pollutant annually to avoid applicability of New Source Review. The vast majority of emissions are emitted by the air curtain incinerator, while the diesel engine and material handling activities not only emit much smaller quantities, their highest pollutants do not coincide with the pollutants that limit the air curtain incinerator. The limiting pollutant for the air curtain incinerator is volatile organic compounds (89.41 tons per year as proposed), whereas the highest emitted pollutant by the diesel generator is NO_x (2.90 tons per year) and the highest emitted pollutant for material handling is fugitive emissions (1.36 tons per year). To limit the number of calculations necessary to show compliance with the 100 ton annual limit, the air curtain incinerator shall be limited to 90 tons of emissions per 12-consecutive months for each pollutant, which is approximately equal to the level of emissions proposed in the application. Ten tons should be an adequate cushion to account for the emissions from the smaller units as well as to ensure that 100 tons of any pollutant are not exceeded. Accordingly, operating limits shall be established to ensure that activity levels do not exceed the levels proposed in the application. The diesel generator shall be limited to 2125 hours of operation per 12-consecutive months, and the material handling operations will be limited to 16,256 tons of clean lumber, wood waste, and yard waste per 12-consecutive months.

To provide assurance that only wood waste, clean lumber, and yard waste is burned, Marrillia has proposed video taping each load as it is being dumped. If undesirable material is found in a load, it will be separated and the contractor will be warned and charged for proper disposal at a landfill. In the event a second load contains undesirable material, it will be rejected, and the contractor will be barred from further deliveries. On-site personnel will be trained to know the difference between wood that can be burned and material that cannot be burned. Each load will be logged when inspected and records will be kept on site. Scales will be used to weigh material prior to burning and records will be kept of hours of operation.

EMISSIONS AND OPERATING CAPS DESCRIPTIONS:

To preclude applicability of 401 KAR 51:052, Review of new sources in or impacting nonattainment areas, VOC and PM emissions from the air curtain incinerator shall not exceed 90 tons per year, each. Compliance with these limits shall be determined by the following formulas:

VOC emissions (tons) = tons of wood burned in every 12-consecutive months times an emission factor of 11 lbs./ton divided by 2000 lbs/ton

PM emissions (tons) = tons of wood burned in every 12-consecutive months times an emission factor of 2 lbs/ton divided by 2000 lbs/ton

The PM emission factor of 2 lbs/ton shall be used until such time as a PM emission factor is developed through permit required testing.

To preclude applicability of 401 KAR 51:052, Review of new sources in or impacting nonattainment areas, this Emission Unit 2, diesel generator, shall not exceed 2125 hours of operation per 12-consecutive months.

To preclude applicability of 401 KAR 51:052, Review of new sources in or impacting nonattainment areas, the amount of material handled shall not exceed 16,256 tons per year.

OPERATIONAL FLEXIBILITY:

None.